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REVIEW ARTICLE

Bad bars: A review of risk factors

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Abstract

Bars, inns, taverns, and hotels have been popular settings for recreational alcohol consumption for centuries. The bar is firmly established as an important adjunct of leisure in many societies. Alcohol consumption in bars is mainly convivial, restrained and problem-free. Even so it has long been apparent that heavy drinking in bars is associated with aggression, violence, public disorder and injuries. This paper examines published empirical evidence related to the possibility that problematic behaviours are associated with identifiable characteristics of a bar. It is concluded that evidence suggests that a number of factors are associated with elevated risks that a bar will be a focus for problematic behaviour. These risk factors are considered under the following main headings: internal physical characteristics and atmosphere (e.g. layout, crowding), organizational factors (e.g. beverage promotions, entertainment), patron characteristics (e.g. gender, age), beverage choice and external characteristics (e.g. location, density). It is concluded that the type of evidence presented here should be taken into account when reviewing licensing arrangements, designing bars and planning the location, type and density of bars in any locality where such establishments are situated.

Keywords: *Public bars, inns, taverns, risk factors, disorder.*

Introduction

Bars have long been an important and valued element in the lives of people in many countries. Even so, it has been evident for centuries that bars and other public drinking locales are frequently associated with aggression, public disorder, violence and injuries (Cavan, 1966; Collins, 1982; Single & Storm, 1985; Giesbrecht *et al.*, 1989; Marsh & Fox Kibby, 1992; Homel, Tomsen, & Thommeny, 1992; Stockwell, Lang, & Rydon, 1993; Graham & Homel, 1997; Lang & Rumbold, 1997; Plant, Single and Stockwell, 1997; Klingemann & Gmel, 2000; Graham and Plant, 2000; Plant, Plant, & Mason, 2002; Plant, Plant and Thornton, 2002). Most of what would be recognized as 'research' into this topic has been conducted during the past 40 years. Even so, interest in the possible effect of bar characteristics upon drinking behaviour is not new. The Select Committee of the UK

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House of Commons on Public Houses and Morals, headed by Charles Villiers (1852–54) and the Royal Commission on the Liquor Licensing Laws, headed by Viscount Sidney Peel (1896–98) considered the possible effects on drinking of the design of licensed premises. There are factors that are associated with the risk of alcohol-related problems in and around licensed premises (e.g. Single and Storm, 1985). Accordingly, a review was conducted to achieve the following aims:

- to identify factors associated with high and low levels of intoxication, aggression, public disorder, crime, under age drinking and injuries in and near public bars and licensed clubs;
- to identify priorities for reducing the levels of problems associated with licensed premises.

This paper sets out to address the first of these aims.

Methodology

This review was not restricted to randomized controlled trials. These are not the basis of this literature. Nor did it exclude studies because of imperfect methodology. This exercise sought to provide an overview of what is suggested by available empirical evidence, particularly that in peer-reviewed journals. The review examined evidence related to the characteristics of licensed establishments. These included organization, management and bar patrons, as well as external characteristics, such as location and geographical density of bars. The review was carried out during October and November, 2005. It was designed to incorporate relevant English language literature from major scientific journals and any other relevant publications that could be identified. Internet search engines were mainly used to identify publications. In addition, an examination of hard copies of both journals and books was also conducted to expand the scope of this inquiry. Selected databases used were examined using keyword searches. Internet search engines used were searched using either keyword searches, in which case one word of each type was found somewhere in the text of the literature or, when this method provided a number of results so large that all pieces could not be checked for relevance, the keywords search was used to search the title and abstract of the literature only. The databases used for keyword searches and abstract and title keyword searches and the numbers of records obtained are noted in Tables 1 and 2:

Results

The literature did suggest that some factors were associated with the risk of alcohol-related problems in and around bars. Some reports were essentially anecdotal or impressionistic. The following section presents a summary of evidence-based publications.

Internal physical characteristics and atmosphere

The internal space of an establishment includes factors such as the size and layout of the serving bar, which will affect factors such as crowding and noise levels, the tidiness, cleanliness, ventilation, and lighting of the establishment.

Layout

Homel and Clark (1994) found that the size of the establishment was only a moderate predictor of aggression, with crowding being a more important factor. It has also been

Table 1. Databases used for keyword searches and the number of records obtained

ASSIA	237 Records
BNI	12 Records
Child data	7 Records
CINAHL – 503 Records	
Community Wise	76 Records
HMIC	87 Records
IBSS	106 Records
Index to Theses	64 Records
ISI Proceedings	483 Records
NHS – National Research Register	201 Records
SOCABS	626 Records
DrugScope	73 Records
LexisNexis Professional:	
Statutes Search	92 Records
UK Journals	448 Records
BHI	167 Records
Environment	0 Records
PLANEX	100 Records
PAIS	121 Records
SOSIG Gateway	7 Records
NMAP/OMNI Gateway	4 Records

Table 2. Databases used for abstract and title keyword searches and the number of records obtained

EMBASE	221 Records
MEDLINE	307 Records
PsychInfo	228 Records
Science Direct	108 Records
SOC Index	285 Records.
ETOH single word searches and number of records obtained:	
Hotel	30 Records
Hotels	10 Records
Inn	9 Records
Inns	2 Records
Tavern	43 Records
Taverns	12 Records
Bar	284 Records
Bars	48 Records
Licensing	359 Records
Indexes single word searches used:	
SAGE Urban Studies abstracts:	
Print edition vol 1	27 Records
Online edition vol 28–33	45 Records

concluded that aggressive behaviour increased in establishments with enclosed design due to inefficient pedestrian movement and crowding (Macintyre & Homel, 1997). This finding implies that the layout of an establishment may be more important in controlling behaviour than overall size. It has been concluded that strategies for reducing violence in and around licensed premises should take note of the design of establishments and the spacing of furniture to reduce crowding, whilst removing hidden areas to facilitate supervision (Brookman & Maguire, 2003).

The atmosphere of the establishment can affect type of patrons who use a bar and also their behaviour. The selection of patrons can be affected by the location, appearance, décor and price list of the establishment (Sommer, 1969). It is considered that pleasant surroundings increase the mood-enhancing effect of alcohol; however, this may indicate that unpleasant drinking environments may also affect a drinker's mood. Dark, crowded and noisy bars were found to increase the severity of aggression between patrons (Leonard, Collins and Quigley, 2003a,b). Greater intoxication was associated with increased seating capacity, rows of tables, no theme, low cleanliness and maintenance levels and shabby décor (Graham, La-Rocque, Yetman, Ross, & Guistra, 1980). Violence tends to occur in bars which are untidy and poorly kept (Pearson-Woodd, 1998). Violence is expected more in bars that are untidy (Leather & Lawrence, 1995).

Graham and Homel (1997) have suggested that attractive, well furnished bars provide a message that bad behaviour will not be tolerated. Graham, West and Wells (2000) found that permissive environments, where patrons believed they could act aggressively, were most relevant to drink-related incidents. The attraction of specific types of patrons was shown by Leonard, Quigley and Collins (2003). They found that the atmosphere of the bar differentiated between patrons who had observed bar violence and those patrons who had not. Graham *et al.* (1980) found that red décor in 'Skid Row' bars was associated with decreased aggression. This might be because red denoted a better appearance in Skid Row bars, which tend to be drab.

Some factors within the bar environment can be considered as irritants that may influence the patrons' behaviours. Such irritants may be due to poor ventilation, with poor quality, smoky air (Homel & Clark, 1994) and excessive noise levels, which may hurt the ears. Excessive heat, noise and air pollution are related to aggression (Geen, 1990, cited by Graham & Homel, 1997). Feelings of physical discomfort, either due to crowding or inadequate seating, were related to aggression (Homel *et al.*, 1992, cited by Graham & Homel, 1997). However, observed improvements in lighting, comfort of tables and chairs, ventilation and cleanliness along with increases in crowding, caused decreasing levels of aggression and violence (Homel, Carvolth, Hauritz, McIlwain, & Teague, 2004). Evidence related to internal bar environment and atmosphere is shown in Table 3.

Organizational factors

Organization includes such factors as the effect of the type of establishment, the effect of the owner/manager, bar staff, and door staff ('bouncers'), the effect of drinks and other promotions, the effect of entertainments, and the effect of policies used to modify patrons' behaviour.

Establishment type

Teece and Williams (2000) found that pubs and clubs were the most common location for victimization from alcohol-related insult. Macdonald, Wells, Giesbrecht, & Cherpitel, (1999) reported that 37% of injuries caused by violence at an emergency room occurred at a bar or club. The effect of different types of establishment on the types of alcohol-related problems encountered is reported in Smith's (1989) longitudinal study of the number and type of outlets in Western Australia. This indicated an increase in hotels, taverns and stores, and a decrease in licensed clubs, restaurants and other premises were associated with increases in liver cirrhosis mortality, but a decrease in driver and motorcyclist mortality.

Table 3. Risk factors associated with the internal bar environment and atmosphere

Study	Date	Location	Methodology	Size of study group	Type of study group	Type of problems	Type of risk factors
Graham <i>et al.</i>	1980	Vancouver, Canada	Observation	185 Drinking establishments	Skid Row bars	Aggression	Permissive decorum expectations, Unpleasant physical surroundings. Tables crowded together in rows
Graham <i>et al.</i>	2000	Ontario,	Observation	Canada 105 incidents of aggression	Bars frequented by young adults	Aggression	Permissive environment, expectations that aggression would be tolerated
Homel & Clark	1994	Sydney, Australia	Observation	147 visits to 45 sites	All public houses normally visited by young people	Aggression	Smoke and poor ventilation
Homel <i>et al.</i>	1992	Sydney, Australia	Observation	23 licensed premises	Establishments categorized as high and low risk	Violence	Crowding and thus inadequate seating
Leather & Lawrence	1995	UK	Vignette task	92 University students	Expectation of 1 public house	Violence expectations	Untidy establishment
Leonard <i>et al.</i>	2003	Based in New York	Questionnaires and interview	190 males	Men who reported aggression or being threatened in a bar in the past year	Aggression severity	Dark, crowded and noisy establishment
Leonard <i>et al.</i>	2003	Based in New York	Survey and interview	368 males and 269 females	Bar patrons	Violence experience	Atmosphere of establishment

The behaviours and expectations of patrons differs in public drinking situations. Wall, McKee and Hinson (2000) found that participants in a bar setting (versus a lab setting) expected greater alcohol-related stimulation and pleasurable disinhibition. However, the problem of under age drinking in licensed premises has been considered as a reduced risk compared with unsupervised outdoor locations (Coleman & Cater, 2005).

There is evidence suggesting that nightclubs, music events, bars and pubs, hotels and sports event bars experience different types and severity of problems.

Nightclubs. Nightclubs are reported to encounter large numbers of intoxicated patrons, alcohol-related harm, violence, and drug use. Staff in nightclubs report a high frequency of encounters with highly intoxicated patrons (Nusbaumer & Reiling, 2003). They also report experiencing a high volume of violent and aggressive incidents, compared with other types of establishment staff (Virtanen & Pernanen, 2001). The risks encountered in nightclubs have been attributed to long opening hours (Lang, Stockwell, & White, 1995a), which encourages higher consumption. Stockwell, Somerford and Lang (1992) suggested that this high risk is due to the opening hours and the types of patrons who are attracted to such clubs. It was mainly young adults aged between 18 and 25 years who attended music dance events held in clubs (Miller, Furr-Holden, Voas, & Bright, 2005). These were settings for high levels of substance use. Kilfoyle and Bellis (1998) reported that health problems encountered by clubbers were attributable to the amount of alcohol consumed, availability of drugs, lack of free water and 'chill out' zones, and poor provision of transport. Calafat and Juan (2004) reported that health and safety problems were related to overcrowding, broken glass, lack of first aid, high price of water, heat, obstructed exits, availability of alcohol and drugs, and scarcity of contraceptives.

In contrast Borel (1999) argued that rave attendees had replaced the hooliganism associated with football fans and have replaced violence with a peaceful co-existence. Linz, Land, Williams, Bryant, and Ezell (2004) found that the presence of an adult nightclub did not increase the number of crimes in the surrounding area.

Music type was used to identify club types in Purcell and Graham's (2005) study of Toronto nightclubs. They suggested that these club types approximate different subcultures, who were less interested in drinking to intoxication and more interested in picking up sexual partners. Highly-charged sexual atmospheres and aggressive sexual atmospheres were reported for the majority of club types. Also illicit drug use was observed in Rave, Reggae-Rap and Superclubs, those which mostly attract young adults.

Bars and pubs. Problems specifically associated with drinking in bars and pubs that are open during normal evening hours were found to include public drunkenness and driving arrests (Rabow & Watts, 1982). The assault rate in Sweden was related to the consumption of alcohol in bars and restaurants, but homicides were associated with drinking in private contexts (Norström, 1998).

Some bars and pubs may foster intoxication and alcohol-related problems. Williams and Burroughs (1995) found that subjects applied cues to their own level of intoxication differently in different settings. In fraternity parties they rated 61% of the cues as more important than when in a bar. In a bar setting they were less concerned with gauging their sobriety.

The use of bars and restaurants has also been linked with drinking and driving (Gruenewald, Mitchell, & Treno, 1996). Hawker and Stevenson (1984) report that the majority of offenders of drunkenness, drunk and disorderly, and drunk driving usually

drank in pubs. The frequency of drunkenness of convicted drunk drivers could be predicted using the frequency of drinking in bars and lounges, compared with other drinking locales (Snow & Landrum, 1986).

Chang, Lapham, and Barton (1996) reported differences between drink driving offenders. They found that older, educated or employed offenders reported drinking more in bars or lounges, whereas younger offenders drank more at private parties. However, Lang and Stockwell (1991) found that most of those arrested for drink driving had been drinking at unlicensed premises, parties, or in parks.

The attraction of bars and pubs to certain types of patrons is due to the desire for entertainment, friendship and facilities (Snow & Anderson, 1987). This indicates that certain groups of patrons are attracted to different types of bars or pubs. Stockwell, Rydon, Gianatti, Jenkins, Ovenden, & Syed's (1992) research indicates that high risk establishments for drink driving accidents had more patrons with high blood alcohol levels and were rated as being severely intoxicated. Beale, Clarke, Cox, Leather, & Lawrence (1999) found that very high reoccurrence rates for violent incidents in some bars and pubs.

Event bars. Bars used for special occasions were found to be associated vandalism, fights, injuries, drink driving, and related problems. These were attributed to the over serving of patrons by inexperienced volunteers (Gliksman, Douglas, Rylett, & Narbonne-Fortin, 1995). The bars at stadiums have also been considered as a danger due to the large number of people who drive to the events (Dram Shop and Alcohol Reporter, 1988).

Beverage promotion

Many establishments use price reductions and other offers on specific days, times of the day or to specific groups of patron. Promotions such as 'happy hours' tend to increase consumption (Babor, Mendelson, Uhly and Souza, 1980, as cited by Graham, 1985) and tend to increase alcohol related-problems in bars. Lincoln and Homel (2001) found that major factors related to nightclub violence were drink promotions. These were used to encourage patrons to drink to excess in a short space of time and facilitated violence (Stockwell, 1995). Premises offering discounted drinks tended to also permit crowding and intoxication (Stockwell *et al.*, 1993).

Drinks promotions have been found to encourage under age drinking and heavy drinking among young patrons, due to the fact that they have low incomes (US Department of Transportation, National Highway Traffic Safety Administration, 2005). Teenagers were found to approve of happy hour promotions, with the level of approval declining with age (Kara & Hutton, 2003). It is likely that under age drinkers, those wishing to drink to intoxication, and those predisposed to problem behaviours will be attracted to those establishments which sell cheap drinks.

Drinks promotion controls have been suggested (Nursing Standard, 2005). Smart and Adlaf (1986) have reported on the effect of banning happy hours in Ontario. They found that consumption of alcohol in licensed premises did not alter, but the number of drink driving charges decreased. Alcohol advertising in licensed premises has been associated with increased consumption and alcohol-related problems (Howard, Flora, Schleicher, & Gonzalez, 2004). Nespor and Csémy (2001) found that aggressive advertising was related to increased consumption by Czech adolescents.

Entertainment

The provision of entertainment such as television, music, dancing and games has been shown to increase the length of patrons' visits to bars and to raise alcohol consumption (Single & Pomeroy, 1999). Ratcliffe *et al.* (1980, cited by Single & Pomeroy, 1999) found that those who participated in dancing and games stayed longer and drank more. Music and dancing were associated with intoxication and aggression in Graham *et al.*'s (1980) study. Bars with no activities had less intoxication and aggression. This may be because noise is considered to be a physiological irritant. However Homel *et al.* (1992) reported that it was not the noise level of music itself which acted as an irritant, but poor quality bands. Better bands were found to interest the patrons and prevent aggression. Bach and Schaefer's (1979) study in Montana indicated that the tempo of country music was inversely associated with drinking speed.

Stockwell *et al.* (1992) reported that nightclubs, hotels, and taverns were considered as high risk for alcohol-related harm, in comparison with clubs and restaurants. This was due to differing types of entertainment, meals, opening hours and patrons. Homel and Clark (1994) reported that music, gambling, games, and dancing appear to attract younger patrons. This may elevate the risk of alcohol-related problems. Snow and Anderson (1987) reported that young convicted drink drivers selected their drinking places for entertainment and facilities. It has also been suggested that the introduction of activities in a bar may reduce drinking rate by moving the patrons' attention to another activity (Clark, 1981).

Staff

The attitudes and behaviour of licensees are stereotypically viewed as confrontational, especially when dealing with conflict situations (Lawrence, 1997). Richardson and Budd (2003) suggest that inadequate staffing may facilitate aggression, due to the time spent queuing for service leading to frustration and crowding. Drinking at work by bar staff was found to be the most influential factor associated with patrons' heavy drinking (Nusbaumer & Reiling, 2002). The drinking behaviours of the bar staff and the landlord were also found to predict aggression (Marsh, 1980; Roberts, 2003). Workplace homicides (in Chicago) occurred most frequently in taverns. Alcohol consumption by tavern workers had occurred in 48% of homicides (Hewitt, Levin and Misner, 2002). Pearson-Woodd (1998) found violence predominately occurred in pubs that employed staff that were rude and unfriendly.

Staff were found to react most aggressively towards patrons if they were behaving highly aggressively or non-aggressively; however, they reacted least aggressively when patrons behaved slightly aggressively or non-physically aggressive (Graham, Bernard, Osgood, Homel, & Purcell, 2005). Attacks on and injury to staff were common in the pathway towards violent incidents in bars (Beale, Cox, Clarke, Lawrence, & Leather, 1998). In some cases, staff react aggressively to protect themselves. However, the highly aggressive reaction to non-aggressive patrons may indicate that intoxicated patrons may be unable to protect themselves and are therefore magnets for aggressive staff (Room, 2005).

It has been reported that establishments with all female bar staff had less intoxication and aggression. Moreover, the friendliness of bar staff was related to intoxication levels with extreme friendliness and extreme unfriendliness both increasing intoxication levels (Graham *et al.*, 1980). However, Griffiths and Hopkins (2001) found that female staff may be viewed as easy targets and unlikely to be able to control unruly behaviour.

Serving practices

In the majority of countries it is illegal to serve alcohol to a person who is intoxicated. However many servers do serve intoxicated people (Rydon, Stockwell, Lang, & Beel, 1996) and many servers are lenient regarding the degree of intoxication of patrons (Andreasson, Lindewald, & Rehnman, 2000). The level of over-serving does differ between servers, with younger servers being particularly likely to over-serve (Toomey, Wagenaar, Erickson, Fletcher, Patrek, & Lenk, 2004). Servers who were in the presence of their managers were less likely to over serve (Wolfson, Toomey, Forster, Wagenaar, McGovern, & Perry, 1996). Over serving intoxicated patrons was found to be a high predictor of problems ranging from violence to drink driving (Stockwell *et al.*, 1993; Stockwell, 1997). However, Graham, Osgood, Wells, & Stockwell (2006) suggest that patrons served to the highest levels of intoxication were less likely to be involved in severe aggression.

Reviews of prior drinking locations of offenders following assaults, road crashes (Stockwell, 1997) and drink driving found that some premises had many citations, indicating that serving practices within some premises were irresponsible (Wood, McLean, Davidson, & Montgomery, 1995).

Many varied 'responsible beverage service' schemes have been used to prevent injury and death associated with drinking (Saltz, 1997). Most schemes aim to provide servers with information regarding alcohol and the law, health and safety issues, factors that contribute to intoxication and those that affect the rate of alcohol absorption (Fox, 1985). Some schemes also aim to develop the skills to recognize intoxication, refuse service and to manage an intoxicated patron effectively. The schemes are used to share the responsibility for the amount of alcohol consumed between the server and the patron (Light, 1994). The liability of the servers has now been used in a number of compensation cases where by the servers of alcohol were held liable for what and how much the patron consumed, and any resulting harm (Norberry, 1995). It has been noted that trained servers initiated more interventions than did untrained servers (Wallin, Gripenberg, & Andreasson, 2002). Patrons had lower blood alcohol concentration levels (Russ & Geller, 1987) and reduced intoxication (Saltz, 1989). The atmosphere was less rowdy in premises with trained servers (Johnsson & Berglund, 2003). Bradbury (1985) reported that owners and managers were found to be familiar with their legal responsibilities, but bar staff were not, however, following training. Gehan, Toomey, Jones-Webb, Rothstein, and Wagenaar (1999) found that servers felt greater responsibility than managers for patron behaviour, indicating the need for management training.

These schemes were highly supported by the servers and management (Graham, Jelley, & Purcell, 2005b), the police (who favoured education over enforcement of responsible serving; Smith, Wiggers, Considine, Daly, & Collins, 2001) and the public. These findings are in contrast with low public support for availability controls, including higher prices and shorter opening hours (Wallin & Andreasson, 2005). It was also suggested that training should be made a condition for any liquor licensee and manager (Lang, Stockwell, Rydon, & Lockwood, 1995b). It has also been reported that the schemes are cost effective due to reduced risks associated with drinking drivers (McKnight & Streff, 1994). Differences exist between schemes and between servers. Waring and Sperr (1982) reported that training for female bartenders should emphasize their role in preventing drink driving. Training for male bartenders should emphasize constructive alternatives to ignoring drunk behaviour.

Graham, Bernard, Osgood, Homel, and Purcell (2005a) found that being male, having more experience, being a manager or bartender, and being employed in a city centre bar were all predictors of increased knowledge prior to a brief training session. In contrast, only

being a manager and being employed at a city centre bar predicted higher knowledge following training, indicating an increased level of knowledge across staff members.

Nusbaumer and Reiling (2003) also proposed that the type of establishment should affect the training received. Staff in nightclubs, and hotel or motel bars have a higher frequency of encounters with intoxicated patrons. Responsible beverage service has also been involved in larger intervention strategies involving under age drinking reduction, drinking and driving strategies, limitation of alcohol and community involvement schemes (Holder, 1994).

The differences in the training received by servers may reduce the effectiveness of responsible serving. Burns, Nusbaumer and Reiling (2003) found that servers were more likely to use slurred speech and clumsiness to indicate the level of intoxication of a patron over counting drinks served or disturbing other patrons in the bar. Many staff only use direct refusals of service. Toomey, Wagenaar, Kilian, Fitch, Rothstein, & Fletcher (1999) found the majority (68%) of service refusals were made directly, with either no excuse or with reference to the patron's apparent intoxication level, with 18% of refusals made by offering an alcohol-free beverage. Homel and Clark (1994) found that intervention with intoxicated patrons including offering non-alcoholic alternatives and service refusals increased the chance of physical violence by a factor of 13. This important finding indicates that the way in which intoxication is managed may be as important in the prevention of violence as is the avoidance of intoxication overall. Wyllie (1997) proposed that the schemes are hampered by the patron's lack of awareness of the legal responsibilities of the staff.

Responsible service schemes by themselves may be rendered ineffective due to poor management (Homel *et al.*, 1992) as some cases found no overall significant effect before or after training (Toomey, Wagenaar, Gehan, Kilian, Murray, & Perry, 2001). Homel and Clark (1994) suggest that the primary motivations of many licensed premises are to maximize profitability and avoid trouble with licensing and other authorities, with little sense of a duty of care. Lang, Stockwell, Rydon, and Beel (1996) found no differences in checking identification before or after training and Lang, Stockwell, Rydon, and Beel (1998) found no reduction in patrons with high blood alcohol levels or the number of drink driving offences. The turnover of managers and staff may also reduce the effectiveness of the programs (Graham, Osgood, Zibrowski, Purcell, Gliksman, Leonard, Pernanen, Saltz, & Toomey, 2004). It has been suggested that schemes have sometimes been adopted simply to reduce insurance premiums. The operation of a scheme can be a successful defence against prosecution (Stockwell, 1992). Stockwell (2001) also suggests that schemes are of little benefit because the laws are rarely enforced. In view of this, there is little motivation for a server to lose money by refusing to serve a patron and risk the goodwill of even if they are intoxicated. Saltz (1987) found that absolute consumption and rate of consumption were unaffected by the programme.

One further problem with responsible service schemes in reducing alcohol-related problems is obviously only those who drink heavily in licensed premises will be effected (Caetano & Raspberry, 2001).

Door staff

Many establishments employ staff (sometimes called 'bouncers') to control the doors and maintain the order of the establishment. However, some research indicates that that they are ineffective in controlling and may be more likely to increase problem behaviour or the

expectations for problem behaviour (Leather & Lawrence, 1995). Door staff were found to often use unreasonable force, too often initiated violence towards patrons, and were ineffective in diffusing violent situations (Victorian Community Council against Violence, 1992).

Homel and Clark (1994) found that in three (out of 29) instances of assault the door staff were the perpetrators of assault and in nearly half of the instances (14 assaults) they were found to either inflame the situation or just ignore it. Door staff are predominately male and do tend to be vilified as stereotypically masculine. Clover (2003) interviewed 20 members of door staff, and found they had a sexist and predatory attitude to female customers.

High numbers of door staff had been arrested for assault in Maguire and Nettleton's (2003) evaluation of reducing alcohol-related violence and disorder. The relationship between door staff and local police was poor, with door staff resenting the interference in what they considered as their matters. Also, Morris (1998) found that a minority of door staff were involved in drug-dealing. Either by simply turning a blind eye to dealing, receiving payment in return for permitting dealing, or acting as dealers.

However the behaviour of door staff may be due to the type of work they are required to carry out. Security type work may require a masculine tough exterior due to the actual amount of personal risk they are under (Wells, Graham, & West, 1998; Monaghan, 2004). It is also likely that the work tasks themselves provide conditions for conflict, largely consisting of requests and demands (Monaghan, 2002). Clearly, not all door staff behave in the same manner. Wells *et al.* (1998) described four categories of responses to incidents: good, neutral, bad, and ugly. Although the categories indicate that in some cases security staff encourage or escalate aggression in other cases they manage to discourage and reduce aggression, indicating that some members of staff have either personality, characteristics, or training to react to or anticipate incidents in a superior manner.

The style, manner and dress of door staff differs between each establishment if not each member of staff. This is possibly due to opposing schools of thought regarding the work task, with either 'meet and greet' or 'smash and bash' requirements (Leather & Lawrence, 1995). Homel and Clark's (1994) observational study carried out in Australia indicated that the presence of Pacific Islander bouncers increased the odds of violence by 20 and these incidents tended to be more severe. These findings could reflect the cultural backgrounds of both bouncers and customers, as well as racism, and a range of issues related to bar type, general context, training, and communication.

The differences in the characteristics of the door staff does clearly effect how they react to incidents; however, it is likely that these characteristics are the reason that that member of staff was employed to start with. The selection of a specific person or specific ethnicities of people, as in Homel and Clark's (1994) Pacific Islander bouncers is due to the expectation that a physical characteristic will enable them to maintain control. Pacific Islander bouncers were reportedly generally very large and therefore would be able to deal with trouble. This type of selection process means that diplomacy or control skills are not as important as size, and therefore inadequate training and management control is likely to equal inadequate reactions.

It is suggested that a simple lack of training or management control is likely to effect the reactions of the door staff (Victorian Community Council against Violence, 1992). A number of schemes have also been established to ensure that all security staff receives training and supervision (Brookes, 2003; Maguire & Nettleton, 2003). Legal accountability changes have been proposed for security personnel (Lister, Hadfield, Hobbs, & Winlow, 2001).

Policies

Policies have been introduced to effectively control the internal functioning of the establishments to reduce alcohol-related harm, excessive intoxication and under age drinking, with one example being the training of staff to serve alcohol responsibly.

The use of glassware in violent incidents promoted the need for safety or toughened glassware (Coomaraswamy & Shepherd, 2003), which breaks into fine particles instead of sharp pieces of glass (Single, 1996) and was found to have high impact resistance and so was less likely to break overall (Shepherd, Hugget, & Kidner, 1993). Shepherd, Brickley, Gallagher, & Walker (1994) also found that toughened glassware was favoured among the majority of bar workers on to safety grounds. A pilot study by Plant, Plant, and Nichol (1994) showed that accidental and non-accidental glass-related injuries were less common in bars that used safety glasses than in other establishments. Safety glasses also appeared to be stronger and more durable than other glasses (Plant & Mills, 1994/1995). In contrast, Warburton and Shepherd (2000) found that toughened glassware increased the number of injuries to staff members as it has a lower impact resistance. Even so, the severity of injuries was found not to differ. The continued importance of regularly collecting empties was emphasized by Harbord (1996).

A review of local opinion towards licensed premises found that establishments that served food and non-alcoholic beverages were generally favoured by local residents (Thomas & Byrne, 1980). Less intoxication and aggression is found in bars where full meals and free snacks are available (Graham *et al.*, 1980). Again, this effect may be due to the physiological effects of eating on alcohol intoxication and may be also due to the types of patron attracted to food serving establishments. Policies to reduce under age drinking in licensed premises have been included in the responsible service schemes for staff and identification checks are prioritized (Beirness, Schmidt, Hawkins, & Pak, 2000) and is shown by the current trend to require identification if a patron appears to be under the age of 21, even though the legal drinking age is 18 years.

Policies to reduce patrons driving whilst intoxicated have again been involved in responsible service programmes, and other methods have included the availability of breath testers and advertisements. McLean, Wood, Montgomery, & Davidson (1994) reported on the use of anti drink driving promotional material in licensed premises. They found no differences in the average blood alcohol concentration of the patrons or of the proportion that were going to drive whilst intoxicated. However, McLean, Wood, Montgomery, and Davidson (1995) report over the year 1990–91, there was a decrease in patronage, as well as the proportion of patrons with high blood alcohol concentrations and those who chose to drive whilst intoxicated.

Designated driver and safe ride schemes have also been introduced. Caudill, Harding and Moore (2000a) found that users of the services were at heavier drinkers and were at high risk for driving while intoxicated. Also Caudill, Harding and Moore (2000b) found that those who serve as designated drivers tend to be at risk, heavy drinkers and reported high levels of driving, whilst intoxicated and riding with intoxicated driver. It has also been suggested that male patrons are less likely to utilize the schemes (Boots & Midford, 1999). Table 4 presents a summary of studies related to organizational factors.

Patron characteristics

Drinking patterns vary enormously amongst different groups of people. These variations reflect age, gender, ethnicity, social class and nationality. The drinking levels and related

Table 4. Risk factors associated with the organization of the establishment.

Study	Date	Location	Methodology	Size of study group	Type of study group	Type of problems	Type of risk factors
Babor <i>et al.</i>	1980	USA	Experiment	34 Males	Males who described themselves as casual or heavy drinkers	Alcohol consumption	Happy hours
Bach & Schaefer	1979	Montana, USA	Observation	3 Bars	3 bars visited on 3 Friday evenings	Rate of drinking	Tempo of country and western music
Fox & Sobol	2000	USA	Observation	2 Bars	Urban bars and Residential neighbour hoods	Sexual offending and bar disorder	Employ effective bouncers
Graham	1988	Vancouver, Canada	Observation	185 bars	303 observations in 185 bars	Aggression and intoxication	Having a band, jukebox and disco entertainment. Bar worker extreme friendliness or extreme unfriendliness
Graham <i>et al.</i>	2005	Toronto, Canada	Observation	809 Staff members	Staff members involved in 417 incidents at 74 different bars or clubs.	Aggressive reactions and behaviours of staff	Patrons are non-aggressive or highly aggressive
Hawker & Stevenson	1984	London, UK	Survey	104 young people	Young people aged between 17 and 25 years, who appeared in court charged with alcohol related crimes	Drunkenness, drunk and disorderly and driving whilst intoxicated	Pub and club patronage
Hamel & Clark	1994	Sydney, Australia	Observations	147 visits to 47 sites	Within 36 premises	Violence	Staff intervention with intoxicated patrons, door staff
Purcell & Graham	2005	Toronto, Canada	Observations	1056 nights of observations	Observations in 75 high capacity nightclubs	Illicit drug use	Being a Rave, Reggae-Rap or Super-club patron
Richardson & Budd	2003	UK	Interviews	27 18–24-year-olds	Young adult binge drinkers	Aggression and violence	Insufficient numbers of serving staff causing queuing for drinks

behaviours amongst bar patrons reflect these differences and some bars attract specific types of people that other establishments do not. The effects of the patrons entering into the establishment can be regarded as affecting the atmosphere of the establishment, as well as the behaviour of the staff and other patrons. Different patrons may choose to visit specific types of establishment and may behave differently depending on their personal characteristics. Individuals may also behave differently when they drink with varying groups of people on different occasions.

The relationship between alcohol and aggressive behaviour was investigated by Graham *et al.* (2000). They suggest that the relationship between alcohol consumption and aggressive behaviour is mediated not only by the effects of alcohol on the patron, but also by the drinking environment, the expectations of the culture and society, and the personality, attitudes, expectations and values of the patron.

Age

The age of the patron may indicate how likely they are to experience negative consequences of drinking. Young patrons may be considered to be naïve to the risks that alcohol and the bar environment may place them in and may make them more susceptible to the influence of other patrons. Nusbaumer, Mauss and Pearson (1982) report that the young, male, unattached, non-religious, and sociable patrons were most at risk from heavy drinking due to the reinforcing effect of the bar setting and bar environment to heavy drinking. Casswell and Zhang (1997) found that access to licensed premises at age 15 years is shown to predict the quantities of alcohol consumed then and in subsequent years, and the quantities consumed were predictive of negative alcohol-related consequences. Snow and Cunningham (1985) report that younger males, who had been convicted for driving whilst intoxicated, tended to drink in away from home locations, including bars, lounges and restaurants to demonstrate their masculinity. After the age of 25 the frequency of drinking away from home decreased.

It may however be the case that some young patrons are predisposed to heavy drinking and this attracts them to bars. Plant, Bagnall and Foster (1990) report that teenage heavy drinkers were more likely to drink illegally (under age) in bars and to drink in mixed sex groups compared with light or non drinking teenagers.

The drinking in licensed premises of some young patrons has also been linked to other sometimes risky behaviours, Van den Akker and Lees (2001) found that in a group of adolescent's aged 11–19, visiting bars was predictive of sexual behaviour. The use of illicit drugs by young patrons was also linked with spending more time in bars (Hartnagel, 1992). Bell, Wechsler, and Johnston (1997) suggest that cannabis (marijuana) use was higher among American college students if they had a bar on campus.

Border crossers

Patrons who cross national borders to drink outside their immediate home areas appear to be at risk of drinking heavily. Lange, Voas, and Johnson (2002) found that half of 18–20-year-olds and a third of 21–30-year-olds from San Diego reported travelling to Tijuana bars and nightclubs, due to the attractiveness of the low cost, liberal availability of alcohol, lack of controls, and presence of heavy drinkers. The problem of alcohol-related car accidents caused by this type of behaviour is reported by Dunkley (2004), who investigated similar behaviours of teenagers living in Vermont and travelling to Quebec to socialize in bars.

Social networks

Patronage in licensed premises at a young age can be attributed to part of growing up and, in many instances, may not result in negative consequences. Engels, Knibbe, and Drop (1999) report that adolescents aged 17–18 years, who went to pubs and discos, had more friends, had closer friends, spent more time and had better contact with friends, experienced less loneliness, and were likely to be romantically involved and have a job. However, they were also found to place less emphasis on educational aspirations.

Gender

Males are widely reported to be more likely than females to drink heavily and to experience alcohol-related problems (e.g. Plant, 1997; Plant & Plant, in press). Single and Pomeroy (1999) state that male, high income, well educated consume a high proportion of their total intake in bars. Female, low income, and less well educated respondents consume a high proportion of their drinking at home. Traeen and Rossow (1994) found that men, people living with others, people with poor economic resources, and the unemployed or uneducated reported spending most time in bars and reported heavy drinking. Drinking within a licensed premise may be used by these patrons to structure or fill the day. A frequent tavern patron and alcohol abusers profile was suggested to be a young man, single, employed, non-religious, disorganized, and sociable (Pearson, 1979). However, it has been suggested that it has become less acceptable for a man to drink enough for the effects to be felt at a bar but it has become more acceptable at his home (Greenfield & Room, 1997).

Male patrons are reported to be responsible for the majority of violent incidents which occur in and around licensed premises. Graham and Wells (2001) report on the differences between incidents of physical aggression reported by males and females. Males tended to report incidents with other males, friends or strangers in bars or public places, and involved four or more participants who had been drinking. Females tended to report incidents with a male opponent, usually known to the female and did not involve alcohol consumption. Also Graham, Wells, and Jelley (2002) report that incidents occurring in bars are more likely to involve males, drinking by both parties, more than two participants and low emotional impact. Macdonald *et al.* (1999) found that 37% of violent injuries investigated occurred at a bar or restaurant, and the group was more likely to be intoxicated, male and with lower incomes, and Roche, Watt, McClure, Purdie, and Green (2001) reported that those injured after drinking heavily in licensed premises were single males, under 30 and were regular heavy drinkers.

The behaviour of male patrons may be due to the perceived need to prove their masculinity and the importance of physical aggression in gaining status, and in responding to a challenge or insult (Benson & Archer, 2002). Graham *et al.* (2000) found that incidents of aggression between male patrons that occurred in bars were more likely to be attributable to expectations (that violence would be permitted), acceptance of aggression, power concerns, male honour and macho values, as well as the effects of alcohol including focusing on the here-and-now, reduced anxiety regarding danger and increased emotionality. In addition, Graham and Wells (2003) analysed incidents of aggression described by males aged, 20–24 years. They report that alcohol played a role in making participants less aware of risk, willing to take more risks, more stimulated, emotional and aggressive. Male honour, face-saving, group loyalty, and fighting for fun were the main motivations for barroom aggression, which itself was generally accepted or encouraged.

The sexual aggression of male patrons at bars and college parties has been attributed to the masculine principles of the settings in which men are encouraged to be assertive, self-reliant and, if necessary violent. Bars are also common settings for enabling men to meet women (Thompson, 2004).

Male patrons are also generally more likely to experience alcohol-related harm. Stockwell *et al.* (1993) found that such adverse effects were most common among drinkers who were male, under 25, drank heavily and drank in licensed premises. Fothergill and Hashemi (1990) report that the majority of assault victims attending hospital accident and emergency departments who had been assaulted in pubs and clubs were employed single young men. They also found that 66% of these males had been drinking prior to admission. Macdonald *et al.* (1999) found that injuries caused by violence compared with those caused by accident or illness, occurred mostly in males and those with lower incomes. Langley, Chalmers, and Fanslow (1996) have reported that homicides and hospitalization events occurring in licensed premises in New Zealand were more likely to involve males, Maoris, unarmed fights and brawls, unknown assailants, alcohol consumption, to occur in the evening at the end of the week and result in head injury. They also found that 17% of all incidents occurring in licensed premises involved people less than 20 years of age. This was then the legal age for consumption of alcohol on licensed premises.

The drinking behaviours, aggression and victimization of female patrons have also been investigated. An increase in alcohol consumption in women in public houses is reported (Davies, 1986). This has been attributed to the need for equal status with men (Pala, 2004). Female aggression in pubs and clubs is considered as important in the construction of modern working class femininities (Day, Gough and McFadden, 2003). Exposure to a bar environment due to a higher frequency of visits and drinking in bars as well as young age and a history of victimization was found to increase a female patron's risk of victimization (Parks & Miller, 1997; Parks & Zetes-Zanatta, 1999). The experiences of aggression of female patrons in licensed premises are reported to be associated with the environmental characteristics of the bar. These include the presence of young patrons and pool playing, and social behaviours they engage in, such as drinking and leaving the bar with strangers (Buddie & Parks, 2003). The possible effects of alcohol consumption on a female patron's likelihood of victimization may be due to behaviours including intoxication, sexual provocation, aggression and calling attention to herself (Parks, Miller, Collins, & Zetes-Zanatta, 1998). Parks (2000) found that at the times that women reported aggressive experiences they had spent less time in the bar, consumed more alcohol and reported feeling more intoxicated. The rise of alcohol consumption by young women in Britain has been elaborated elsewhere (Plant & Plant, *in press*).

Sexual orientation

Gay, lesbian, bisexual, and transgender bar patrons may be more prone to alcohol-related risks and harm due to the reported reliance on licensed premises as social settings, and as places to meet partners. There is compelling evidence suggesting that such people are at particular risk of violent hate crimes in areas known to feature 'gay' bars (Hughes & Wilsnack, 1994; Plant, Plant, Mason, & Thornton, 1999).

Heffernan (1998) reported that if lesbians were found to rely on bars as a primary social settings, they were more likely to use alcohol and avoidant coping was associated with drinking excessively. Glaus (1988) states that lesbians with heavy reliance on bars for socialization are at risk from 'alcoholism.' Greenwood, White, Page-Shafer, Bein, Osmond,

Paul, and Stall (2001) found that frequent gay bar attendance and multiple sex partners were related to heavy alcohol and polydrug use. However Israelstam (1988) has reported that alcohol intervention workers thought that both covert and bar-going gay men were at equal risk of alcohol abuse. They further concluded that gay men were more likely to abuse alcohol than were heterosexuals. In contrast, Bloomfield (1993) found no differences in alcohol consumption or drinking patterns between heterosexual or homosexual men and women.

Personality characteristics

The personality of the patron may affect how alcohol affects them and how they react to incidents occurring within the establishment. Alcohol may increase aggressive behaviour. However, the expectancy that alcohol increases aggression may itself increase aggression and the social setting itself may also do this. Leonard *et al.* (2003b) found that individuals with high dependence scores and alcohol aggression expectancies also scored higher on angry temperament, impulsivity and neuroticism, and scored lower on agreeableness, conscientiousness and openness to experience. Quigley, Corbett and Tedeschi (2002) also found that the belief that intoxication causes aggressiveness was related to experiencing alcohol-related violence, moderated by the need to appear to be powerful. Wall, Thrussell and Lalonde (2003), reported that those with alcohol outcome expectancies were more aggressive and risk-related before intoxication. Other people's behaviour was perceived as having aggressive intent if the patron expects that alcohol increases aggression (Lange, 1997).

The possibility that the bar characteristics attract certain patron characteristics was investigated by Leonard *et al.* (2003c). They investigated the effect of aggression-facilitating traits in attracting individuals to high risk venues and to determine if, once in those venues, the aggression-facilitating traits were associated with experiencing aggression. Anger, impulsiveness or any other personality measures of the patrons did not differ between those who had observed violence and those who had not done so. However, aggression-facilitating traits differentiated patrons who had experienced bar violence from those who had only observed it. Male patrons were mainly distinguished by agreeableness and openness to experience. Female patrons were mainly distinguished by anger and alcohol expectancies. Quigley, Leonard and Collins (2003), report that the patrons' age, alcohol dependence, and anger expression differentiates those who frequented violent and non-violent bars.

The bar may be considered as attracting similar types of patrons due to modelling or imitation effects. Caudill and Kong (2001) found that patrons with high need for social approval and those who drink heavily in social contexts were more vulnerable to imitating the behaviours of other drinkers.

Culture

There is evidence to suggest that the different cultures of drinking in licensed premises effects the drinking behaviours of the patrons. Nunes-Dinis and Lowe (1992) report that too many bars and feasts in Spain and Portugal contribute to alcohol-related problems. White collar workers in Japan are associated with problem drinking due to the requirement of getting drunk in bars with clients and co-workers and as part of company loyalty (Milne, 2002).

A survey of establishments in London and Dublin indicated that Irish drinkers in England have high levels of morbidity and mortality compared with the general population due to the Irish drinking style of high consumption per episode and the English pattern of more frequent drinking (McCambridge, Conlon, Keaney, Wanigaratne, & Strang, 2004).

Manual workers consumed more than non-manual workers in Plant, Kreitman, Miller, & Duffy's (1977) observation of bars in Edinburgh. The manual workers were found to drink more beer, whereas non-manual workers drank more spirits.

High rates of violence in bars catering to working class patrons in the south of the USA was attributed to the culture of becoming loud and boisterous whilst drinking (Mizell, 1979).

Patrons and social worlds

Licensed premises are not purely used as places to consume alcohol; they also have a highly sociable side allowing patrons to meet old as well as newly acquired friends and acquaintances. Clinard (1962) indicated that drinking establishments are important parts of society, and allow patrons to socialize, relax and talk over problems with others, and Storm and Cutler (1985) suggested that the social functions of taverns are seen as desirable. However, the use of establishments as a social resource have been considered as increasing the risk of alcohol related problems (McKirnan & Peterson, 1988, 1989), as indicated by the research on sexuality differences.

Group drinking

The effect of drinking as part of a group further indicates the possibility that some patrons may be vulnerable to imitating behaviours. Caudill and Marlatt (1975, cited by Single & Pomeroy, 1999) found that the drinking rate of confederates was a strong influence on consumption especially of high rate drinking companions. Also patrons may conform to the group norm, so that patterns of behaviour and drinking rates consistent with the rest of the group (Barbara, Usher & Barnes, 1978). Sommer (1969) found that isolated drinkers consumed less than people in groups, due to the extended length of stay in group settings. Harford, Wechsler, & Muthen (1983) found that group drinking was related to the duration of stay in a bar among males, which is related to level of consumption. An association between drinking group size, level of consumption and alcohol-related incident seriousness was reported by Graves, Graves, Semu, and Sam (1982). However Sykes, Rowley, and Schaefer (1993) found the proportion of a group drinking heavily was not affected by group size but was affected by average alcohol consumption, group gender composition and average duration of stay in bar. It has also been concluded that it was permissible for a group member to drink more than other members but not less (Bruun, 1959, cited by Single and Pomeroy, 1999). It has also been reported that all drinking groups have higher levels of consumption than solitary drinkers do (Single and Pomeroy, 1999). However, Marczyński, Welte, Marshall, & Ferby (1999) have reported that drinking alone in bars is a predictor of alcohol-related problems.

Frequent patrons

Those patrons who regularly visit a licensed premise have been found to be at risk of alcohol-related harm and other health problems. Tanioka (1986) reported that bar patrons

and smokers were more likely to be assaulted, possibly because those who smoke and drink take more risks. There is certainly extensive evidence to support the latter view (e.g. Room & Collins, 1983; Jessor, Donovan, & Costa, 1991; Plant & Plant, 1992).

It has also been reported that hazardous drinkers tend to drink alone, in bars, have poorer physical and mental health. They also appeared to have high a high risk of 'adverse social outcomes' (Gaunekar, Patel, & Rane, 2005). Ericksen and Trocki (1992) report that frequent bar going, drunkenness, high volume drinking and feeling uninhibited increased the risk for sexually transmitted infections. This is possibly due to an increased rate of changing sexual partners. However it may be found that those with other problems may be attracted to regularly visiting a licensed establishment. Mustane and Tewksbury (2004) found that heavy users of illicit drug were often bar 'regulars.' Table 5 summarizes the studies that have related to risk factors associated with patron characteristics.

External characteristics

There is some evidence that 'external' factors are associated with 'risks' related to bars. Such factors include the geographical position of an establishment and its surrounding neighbourhood and the density of establishments in an area.

Location

Where an establishment is located will affect the types of risks associated with it. City centre establishments may be at higher risk for problems, Ingemann-Hansen and Brink (2004) found that 46% of assault victims from Aarhus (Denmark) city centre were assaulted in public houses or the streets nearby compared with 5% of victims in the district outside the city centre. Establishments near to colleges may be likely to attract college students which can lead to problematic behaviour due to heavy drinking. Levels of drinking of college students drinking at off campus bars were related to disruptive behaviours and becoming involved in arguments (Harford *et al.*, 2003) and Wechsler, Lee, Hall, Wagenaar, & Lee (2002) found that residents near colleges, especially those with high levels of binge drinking among students, reported higher numbers of alcohol outlets within a mile. The neighbourhoods had lower socioeconomic status and a lower quality of neighbourhood life due to alcohol related disturbances, including vandalism, noise, disturbances, drunkenness, vomiting, and urination.

The location of some establishments or patrons in relation to the establishments has led to safety issues due to lack of transport (Kilfoyle & Bellis, 1998) and Gallaher, Fleming, Berger, and Sewell (1992) reported on the large proportions of mortalities of Native Americans in New Mexico due to hypothermia and pedestrian-motor vehicle accidents when highly intoxicated. Because possession or sale of alcohol was illegal in many reservations the mortalities were due to American's travelling long distances to obtain alcohol.

However, Stevenson, Brewer and Lee (1998) found no relation between location of an establishment and the number of car accidents. There was no association with crashes which occurred in close proximity to a licensed establishment.

Density

The concentration of bars in a specific area has been linked to increased crime, violence, social problems and alcohol-related car accidents. This type of link is not new. Temperance

Table 5. Risk factors associated with the patrons characteristics.

Study	Date	Location	Methodology	Size of study group	Type of study group	Type of problems	Type of risk factors
Bell <i>et al.</i>	1997	USA	Survey	17,592 students	Students at American Colleges	Cannabis use	Colleges with pubs and bars on campus
Boscarino <i>et al.</i>	1995	San Francisco	Interview	921 adults	Alcoholics entering alcoholism treatment	HIV infection	Gay men with high bar socializing expectations
Casswell & Zhang	1997	New Zealand	Longitudinal survey	750 adolescents	Adolescents aged 15 and 18 years	Quantities consumed	Access to establishments at 15 years.
Caudill & Marlatt	1975	USA	Experiment	48 males	College students classified a heavy social drinkers	Heavy alcohol consumption	Other patrons drinking heavily
Caudill & Kong	2001	Rockville, Maryland, USA	Experiment	202 adults	Heavy social drinkers patrons drinking	Modelling of other	High need for social approval
Erickson & Trocki	1992	San Francisco Bay, USA	Survey	968 adults	46% men and 54% women	Sexually transmitted disease carriage	Frequent bar going, drunkenness and high volume drinking
Gaunekar <i>et al.</i>	2005	Goa, India	Interview	234 males	75 hazardous drinkers, 78 casual drinkers and 81 abstinent workers selected form an industrial worker population	Hazardous drinking	Drinking alone in bars, preference for non-commercial alcohol beverages with high alcohol concentration
Graham <i>et al.</i>	2000	Ontario, Canada	Observation	105 incidents of aggression	High risk bars frequented by young Adults	Aggression in bars	Males, expectations of aggression acceptance, power concerns, male honour, macho values
Graham & Wells	2001	Ontario, Canada	Interviews	1753 adults	Adults aged 18–60. years	Aggression in bars	Males, intoxication.
Graham & Wells	2003	Canada	Interviews	21 Males	Males aged, 20–24 years reporting incidents of aggression in bars	Aggression	Alcohol making patron less aware of risks and more willing to take risks, more stimulated, emotional and aggressive. Acceptance and endorsement of aggression in bars

Table 5. Continued.

Study	Date	Location	Methodology	Size of study group	Type of study group	Type of problems	Type of risk factors
Graves <i>et al.</i>	1982	Auckland, New Zealand	Observation	216 males	Maori, Pacific Islander and European patrons in 12 public bars	Heavy alcohol consumption	Group drinking increases length of stay which increases amount of beer consumed
Greenwood <i>et al.</i>	2001	San Francisco	Survey	428 young males	Homo or bisexual	Heavy alcohol and polydrug use	Frequent gay bar attendance
Harford <i>et al.</i>	1983	Boston, USA	Observation	329 patrons	Within 3 bars	Heavy alcohol consumption in males	Group drinking increasing length of stay
Marczynski <i>et al.</i>	1999	New York, USA	Survey	1076 adults	Adults who have consumed alcohol in last 30 days	Alcohol related problems	Drinking alone in bars
McKirnan & Peterson	1989	Michigan, USA	Survey	3400 adults	Homosexual	Heavy alcohol and drug use	Use of bars a social resource
Mustane & Tewksbury	2004	Southern USA	Survey	1218 students	College students	Hard drug use	Being a bar 'regular'
Plant <i>et al.</i>	1977	Edinburgh, Scotland	Observation	1398 patrons	Patrons of 6 public bars	Consumption of alcohol	Being a manual worker
Sykes <i>et al.</i>	1993	USA	Observation	1996 patrons	Groups and individuals in 565 bars	Heavy alcohol consumption	Increased group consumption and length of stay in bar

maps from 1899 (Rowntree and Sherwell, cited by Kneale, 2001) indicated the geographic association between the number of public houses and the distribution of drunkenness offences. The effect of establishment's concentration on increasing crime levels was reported by Roncek and Maier (1991) who found that bars on residential city blocks had an increasing effect on the amount of crime. Conversely, Roncek and Pravatiner (1989) reported that most residential city blocks with a tavern in San Diego were not associated with serious crime and the most crime-ridden block did not have a tavern.

The relationship between density of establishments and violence was reported by Scribner, MacKinnon and Dwyer (1995). They found that higher levels of alcohol outlet density were associated with assaults. Zhu, Gorman and Horel (2004) found a clear association between outlet density and violence. Norström (2000) found that increases in the number of drinking places in Norway between, 1960 and, 1995 were associated with increases in criminal violence. However, Lipton and Gruenewald (2002) reported that, although the density of bars was found to be strongly associated with greater rates of assault, the density of restaurants was associated with less violence.

The relationship between establishment density and social disorder was reported by DiIulio (1995), who found that the concentration of outlets in Milwaukee's inner city neighbourhoods was due to a loose control system. This was a major factor in social disorder and high crime victimization. The high concentration of outlets was regarded as driving community breakdown.

The relationship between establishment density and alcohol-related car accidents and driving, whilst intoxicated was reported by Gruenewald, Johnson, and Treno (2002). They found that restaurant densities were directly related to greater drinking frequency and driving whilst intoxicated. Even so, bar densities were inversely related to driving whilst intoxicated. Scribner, MacKinnon and Dwyer (1994) reported that alcohol-related crashes resulting in property damage were positively associated with outlet densities. Van Oers and Garretsen (1993) found associations between the numbers of bars and traffic injuries per neighbourhood.

Lascala, Gerber, and Gruenewald (2000) found that availability of alcohol through bars was directly related to pedestrian injuries due to collisions in which the pedestrian had been drinking. LaScala, Johnson, and Gruenewald (2001) found that pedestrian injuries due to collisions occurred more in areas with greater bar densities and greater populations, and where the local population reported drinking more per occasion. Treno, Gruenewald, and Johnson (2001) found an association between both on and off premise outlet densities and self reported injuries. Borges (1989) found that the prevalence of heavy drinkers and population density were the best predictors of alcohol-related problems compared with prevalence of abstainers, *per capita* bars, illiteracy, unemployment, and population density.

It is also suggested that disadvantaged neighbourhoods, possibly predisposed to increased problems, may have difficulty attracting other businesses and institutions over licensed premises (Peterson, Krivo, & Harris, 2000) and Morland, Wing, and Diez Roux (2002) found that liquor stores were disproportionately located in predominantly low income, African American neighbourhoods in Mississippi and North Carolina. They found that increases in prevalence of bars was not associated with an increase in heavy drinking. Findings related to the association between external characteristics and bar risks are summarized in Table 6:

Conclusions and discussion

There is an extensive literature in which aggression, violence, public disorder and injuries inside and in the proximity of bars is discussed. Much of this discussion often plausible, has

Table 6. Risk factors associated with the external characteristics of the establishment

Study	Date	Location	Methodology	Size of study group	Type of study group	Type of problems	Type of risk factors
Freisthler <i>et al.</i>	2005	Northern California, USA	Data analysis of child abuse and neglect reports	304 blocks	Blocks in Northern California	Child abuse and neglect incidences	Higher levels of alcohol outlet density
Gallaher <i>et al.</i>	1991	New Mexico, USA	Data analysis of fatality rates	347 residents	New Mexico residents who died of unintentional injuries between 1980 and 1990	Death due to hypothermia and pedestrian-motor vehicle crashes	Travelling to off reservation bars to obtain alcohol
Gruenewald <i>et al.</i>	2002	California, USA	Survey	7826 Drinkers	Drinkers obtained from a population survey	Driving whilst intoxicated following bar patronage	Density of restaurants in residential area
Harford <i>et al.</i>	2003	Boston, USA	Survey	8426 students	Students aged 18–24 years in 1997–1999, who reported attendance at off campus parties and bars in the last month	Disruptive behaviours and victimization	Drinking at off campus bars
Ingemann-Hansen & Brink	2004	Aarhus, Denmark	Data analysis of emergency room register	1106 assault victims	Assault victims registered at Emergency rooms in 1999 and 2000	Assault in public houses	City centre establishments
LaScala <i>et al.</i>	2000	San Francisco, California, USA	Data analysis of census tracts	149 census tracts	Census tracts for San Francisco	Pedestrian injury collision	Higher levels of alcohol outlet density
Scribner <i>et al.</i>	1995	Los Angeles, USA	Data analysis of assaultive violence rates	74 cities	Cities in 1990	Assaultive violence rates	Higher levels of alcohol outlet density
Zhu <i>et al.</i>	2004	Austin and San Antonio, Texas, USA	Data analysis of census tracts	451 census tracts	188 tracts from the City of Austin and 263 tracts from the City of San Antonio	Violent crime rates	Higher levels of alcohol outlet density

been impressionistic or anecdotal. This paper has set out to examine empirical evidence related to the existence of possible 'risk factors' associated with bars. Current evidence supports the conclusion that a number of factors are associated with elevated risks that a bar will be a focus for problematic behaviour. These factors have been considered under the following main headings: internal physical characteristics and atmosphere, organizational factors, patron characteristics and external characteristics. The empirical findings of the studies considered under these headings are illustrated in Tables 3–6. As these tables show, the risks that were most often noted related to aggression, intoxication and violence. The risk factors associated with internal bar environment and atmosphere included the following: aggression, violence, and expectations of violence. The characteristics associated with these risks were crowding, 'permissive decorum,' unpleasant surroundings, an expectation that violence would be tolerated, smoky, poorly ventilated conditions, untidiness, dull lighting, high noise levels, and contaminated drinking glasses (see Table 3). The organization of an establishment was found to be associated with the rate of level of drinking, sexual; offending, aggression and intoxication, disorderly behaviour and driving while intoxicated. The associated factors were the type and speed of music, the nature of staff interventions and behaviour, and the behaviour of bouncers (see Table 4). Several studies have indicated that there are risks (such as heavy drinking, aggression illicit drug use and the spread of sexually transmitted diseases) associated with patron characteristics. Such studies have highlighted heavy and problematic drinking in some student bars, gay bars, bars that admit young people, bars where people drink in groups and, conversely, two studies suggesting that solitary drinking is a risk factor (see Table 5). Finally, risks such as child abuse and neglect, death from hyperthermia, road traffic accidents, driving while intoxicated, public disorder and assault were associated with 'external bar characteristics.' These included the density of bars (including restaurants), and travel to bars (such as those away from college, in an urban centre or away from a Native American reservation) where a more permissive atmosphere prevailed (see Table 6).

Some of the findings reported above may be applicable to other settings, but some may not be. This review was confined to English language reports. Moreover, most of the studies cited were carried out in Australia, Canada and the USA. Only a few were carried out in Western Europe and none originated from elsewhere. There are marked cultural variations between drinking cultures and drinking patterns in different countries, and even between the regions of single countries (Pitman & Raskin-White, 1991; Heath, 1995). In spite of this, it is clear that several studies have found that variables, in particular intoxication, aggression and violence, were associated with both the internal and external characteristics of a bar. Other factors included the rate and volume of alcohol consumed, public disorder, sexual offending, driving while intoxicated, illicit drug use, child abuse and neglect, and road traffic injuries. There is scope for studies in this area to be replicated and for new research in different settings. More detailed studies could usefully investigate the possible importance of a wide array of risk factors and adverse outcomes. The policy implications of current evidence are considered in an editorial (Plant & Green, 2007).

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